

## CURRICULUM VITAE

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**Miles Daniel Lawrence, Ph.D., PE**  
Professor of Physics and Engineering  
Northwest Nazarene University  
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(208) 467-8662  
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### EDUCATION

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- May 1999      Doctor of Philosophy in Physics, Purdue University, West Lafayette, IN  
3.8/4.0 GPA – Specializing in Experimental Condensed Matter Physics
- August 1994    Master of Science in Physics, Virginia Commonwealth University, Richmond, VA  
4.0/4.0 GPA - Specializing in Theoretical General Relativity
- June 1992      Bachelor of Science (Honors) in Physics, Northwest Nazarene College, Nampa, ID  
3.4/4.0 GPA

### EXPERIENCE

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#### **Professor of Physics and Engineering – Northwest Nazarene University, August 2001 – Present**

- Classes taught:
  - Introduction to Physics and Engineering, Introduction to Engineering, College Physics, Physics for Scientists and Engineers, Experimental Instrumental Physics, Analytic Mechanics, Quantum Mechanics, Electricity and Magnetism, Solid State Physics, Astronomy, Engineering Statics, Near Space Exploration, Cornerstone, Science and Science Fiction, Intro to Physical Science.
- Chair, Department of Physics and Engineering 2001 – 2017
- Interim Dean – School of Health and Science 2009
- Vice-Chair of the Faculty – Fall 2007-2009
- Faculty Marshall – Fall 2008 – Spring 2017
- Assistant Faculty Marshall – Fall 2006 – Spring 2007
- Honors College Faculty
- Committee Work:
  - Undergraduate Academic Council – Fall 2011 - 2017
  - Faculty Policy Council
    - Chair – Policy sub-committee – Fall 2002 – Spring 2007
    - Chair – Fall 2007 – 2009
  - General Education Committee - Fall 2003
  - Committee on Committees – Fall 2002 – Spring 2003
  - Academic Ceremonies Committee – 2005 – 2017
  - University Accreditation committee – 2018
  - University Technology commission – 2018 – present
  - University Bookstore commission – 2018 – present
- Led department in initial ABET accreditation 2014
- Designed CubeSAT with students that will test RFID technology for wireless sensors in space.
- Conducting research on the Acoustical Physics of Trumpets and Vibrational Holograms.

- Designed with students Foucault Pendulum in Thomas Health and Science Center
- Developed general education course in high altitude balloon research.
- Led 9 students teams in NASA Micro-gravity U and RockON/RockSAT projects
- Advised over 300 undergraduate students over last 18 years.

**Engineer – Raytheon Company, May 1999 – August 2001**

Worked in the AIM-9X analysis group in the Electro-Optical Subsystems Department and supported:

- Coordinating team in performing in depth analysis of missile telemetry and tracker to determine problems with missile and missile software.
- Presenting monthly updates to Navy and Air Force customers.
- Preparation for three successful Weapon Systems Performance Reviews.
- Grading and scoring of the tracker algorithms versus the contractual requirements.

**Graduate Research Assistant - Purdue University, June 1995 – May 1999**

- Conducted research on manufacturing and measuring mesoscopic systems
- Discovered long range superconducting proximity effects in superconductor-ferromagnetic systems
- System administrator for local computer network, including 3 UNIX systems, Macintosh computers, and X-terminals

**Graduate Teaching Assistant - Purdue University, August 1994 - June 1995**

- Teaching computational physics laboratories as well as mechanics labs for engineering students.
- One-on-one tutoring with students several hours each week

**Graduate Teaching Assistant - Virginia Commonwealth University, August 1992 - June 1994**

- Teaching the laboratories for introductory physics classes. Includes preparing quizzes for the classes each week and grading all work.
- Helped run the Resource Room where students came to get one-on-one help.

## **PUBLICATIONS**

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**M.D. Lawrence**, (2012) *An Open Letter To Graduating Science (And Non-Science) Students At Nazarene Colleges And Universities*, Didache: Faithful Learning, Volume 12, Number 1. Retrieved from [http://didache.nazarene.org/index.php?option=com\\_docman&task=doc\\_view&gid=874&Itemid=51](http://didache.nazarene.org/index.php?option=com_docman&task=doc_view&gid=874&Itemid=51)

**M.D. Lawrence**, Stephen Parke, Chad Larson, Ben Gordon, Seth Leija, David Vinson, Drew Johnson, Zach Thomas. (2012) *RockSat-C 2012 Final Report*. NASA RockSAT Project.

**M.D. Lawrence**, Stephen Parke, Kevin Halle, Chad Larson, Grady Turner, Weston Patrick, Keith Moilanon, Dorothy Ackerman, Darrel Leiber. (2012) *Superhydrophobic Phase Separation in Microgravity*. NASA Microgravity University SEED Program.

**M.D. Lawrence**, Stephen Parke, Kevin Halle, Chad Larson, Grady Turner, Weston Patrick, Jesse Baggenstos, Jordon Hush. (2012) *Superhydrophobic Materials in Microgravity*. NASA Microgravity University SEED Program.

**M.D. Lawrence** and William Packard, *To Space and Back in One Day*. Submitted to QST Sept. 2011.

**M. D. Lawrence** and N. Giordano; *Proximity effects in superconductor-ferromagnet junctions*, 1999 J. Phys: Condens. Matter **11** 1089

**M. D. Lawrence** and N. Giordano; *Weak-localization-like effects in superconductor - ferromagnet - superconductor structures* , 1996 J. Phys.: Condens. Matter **8** L563-L568

T. M. Jacobs, **M. D. Lawrence**, K. Hong, N. Giordano Jr., N. Giordano Sr.; *On Catching Fly Balls*, Science 1996 July 12; **273** (5272):256 (in Technical Comments)

**M. D. Lawrence**; *Einstein's equations in vacuum spacetimes with two spacelike killing vectors using affine projection tensor geometry*, Thesis, Virginia Commonwealth University, August 1994

**M. D. Lawrence**; *Physics 201-202 Laboratory Manual* - Virginia Commonwealth University

## CONFERENCES AND TALKS

B. Campbell, D. Duryea, C. Nogales, K. Davis, D. Lindsay, J. Cox, Q. Frederick, Dr. S. Parke, Dr. J. Griffin, **Dr. D. Lawrence**, "Orbital Space Science Projects at NNU," a poster presentation at the 2019 Idaho Conference on Undergraduate Research, Boise, ID, 2019.

Lucas Chamber, Curtis Garner, Cassie Wade, Daniel Slemmer, Jordan Poundstone, Brandon Pankey, Dan Lawrence, Stephen Parke, and Joshua Griffin, Cheng Qi, Mohammad Alhassoun, and Michael Varner, "Distributed Sensing for Space Applications Using Modulated Backscatter," a poster presentation at the IEEE International Conference on RFID, Phoenix, AZ, May 9-11, 2017.

Cassie Wade, Daniel Slemmer, Curtis Garner, Lucas Chamber, Jordan Poundstone, Brandon Pankey, Joshua Griffin, Stephen Parke, **Dan Lawrence**, "RFTSat: Demonstrating Passive RF Sensor Tags Using Backscatter Data Communication", 14th Annual CubeSat Developers Workshop, 2017, April 26-28, 2017.

Cassie Wade, Curtis Garner, Jordan Poundstone, Lucas Chamber, Daniel Slemmer, Joshua Griffin, Steve Parke, **Dan Lawrence**, "RFTSat: Backscatter Radio for In-Orbit Distributed Sensing," a poster presentation at the Idaho Conference on Undergraduate Research, Boise, ID, 2016.

C. Larson, B. Gordon, S. Leija, D. Vinson, A. Johnson, Z. Thomas, **D. Lawrence**, S. Parke, "RockSAT-C: Evaluating Future Space Technology," 2012 Innovation Showcase at ITC Hall of Fame Celebration of the Idaho Innovation Awards, October 2012, Boise, ID.

**Invited Talk – M.D. Lawrence** *NASA Experience for Undergraduates - Microgravity University and RockSat*, NASA Space Grant Western Regional Meeting, September 27-29, 2012 Coeur d'Alene, Idaho

Kevin Halle, Grady Turner, Weston Patrick, Chad Larson, Jordon Hush, Jesse Baggenstos, Steven Parke, and **M.D. Lawrence**: *Superhydrophobic Surfaces in Microgravity*. Poster presented at the 41<sup>st</sup> International Conference on Environmental Systems, sponsored by the American Institute of Aeronautics and Astronautics, June 2011

Kevin Halle, Grady Turner, Weston Patrick, Chad Larson, Jordon Hush, Jesse Baggenstos, Steven Parke, and **M.D. Lawrence**: *Superhydrophobic Surfaces in Microgravity*. Poster presented at the 19<sup>th</sup> Regional Conferences on Undergraduate Research of the Murdock College Science Research Program, November 2011

Chad Larson, Ben Gordon, and **M.D. Lawrence**: *RockON: Going to Space and Back Again*. Poster presented at the 19<sup>th</sup> Regional Conferences on Undergraduate Research of the Murdock College Science Research Program, November 2011

Brad Yuly and **M.D. Lawrence**: *Holographic interferograms of vibrating objects*. Poster presented at the 18<sup>th</sup> Regional Conferences on Undergraduate Research of the Murdock College Science Research Program, November 2010

McKenzie Bailey, Brad Yuly, and **M.D. Lawrence**: *Designing a Foucault Pendulum*. Poster presented at the 18<sup>th</sup> Regional Conferences on Undergraduate Research of the Murdock College Science Research Program, November 2010

John Watson and **M.D. Lawrence**. *Using Holographic Interferometry to Image Vibrating Objects*. Poster presented at the 17<sup>th</sup> Regional Conferences on Undergraduate Research of the Murdock College Science Research Program, November 2009

Michelle Pounds and **M.D. Lawrence**: *Design and Construction of a Foucault Pendulum*. Poster presented at the 17<sup>th</sup> Regional Conferences on Undergraduate Research of the Murdock College Science Research Program, November 2009

Kevin Knutson and **M. D. Lawrence**; *Near Space Exploration Using High Altitude Weather Balloons – A General Education Course*. Poster presented at the 14<sup>th</sup> Regional Conferences on Undergraduate Research of the Murdock College Science Research Program, November 2006

Andrew Tunnell , Jenna Haigemeier, and **M. D. Lawrence**; *Use of Mechanical Lips to Determine the Acoustical Properties of Trumpets*. Poster presented at the 13<sup>th</sup> Regional Conferences on Undergraduate Research of the Murdock College Science Research Program, November 2005

Brooks Wheatley, Michael Gould, and **M. D. Lawrence**; *Near Space Exploration and Research using High Altitude Weather Balloons*. Poster presented at the 46<sup>th</sup> Annual Meeting of the Idaho Academy of Science, April 2005

Andrew Tunnell , Jenna Haigemeier and **M. D. Lawrence**; *Use of Mechanical Lips to Determine the Acoustical Properties of Trumpets*. Poster presented at the 46<sup>th</sup> Annual Meeting of the Idaho Academy of Science, April 2005

Andrew Tunnell, and **M. D. Lawrence**; *Use of Mechanical Lips to Determine the Acoustical Properties of Trumpets*. Poster presented at the 13<sup>th</sup> Regional Conferences on Undergraduate Research of the Murdock College Science Research Program, November 2004

Emily K. Mace, Andrew Tunnell, and **M. D. Lawrence**; *Construction and Use of Mechanical Lips to Determine the Acoustical Properties of Trumpets*. Poster presented at the 12<sup>th</sup> Regional Conferences on Undergraduate Research of the Murdock College Science Research Program, Pacific Lutheran University, Seattle, WA, November 2003

Emily K. Mace and **M. D. Lawrence**; *On Giving the Physics of Sound Production in Trumpets More Than Just Lip Service*. Poster presented at the 45<sup>th</sup> Annual Meeting of the Idaho Academy of Science, Lewis and Clark State College, Lewiston, ID, April 2003

Emily K. Mace and **M. D. Lawrence**; *On Giving the Physics of Sound Production in Trumpets More Than Just Lip Service*. 11<sup>th</sup> Regional Conferences on Undergraduate Research of the Murdock College Science Research Program, Whitman College, Walla Walla, WA, November 2002

**M. D. Lawrence**, N. Giordano; *Conductance of superconductor-ferromagnet-superconductor structures*; 1998 American Physical Society March Meeting, Los Angeles, California, March 16 - 20

**M. D. Lawrence**; *Proximity-effects in superconductor-ferromagnet-superconductor structures*; Northwest Nazarene College, Nampa, ID, November 1997

**M. D. Lawrence**, N. Giordano; *Proximity-effects in superconductor-ferromagnet-superconductor structures*; 1997 American Physical Society March Meeting, Kansas City, Missouri, March 17 - 21

**M. D. Lawrence**, N. Giordano; *Weak-localization like effects in superconductor-ferromagnet-superconductor structures*; 1996 American Physical Society March Meeting, St. Louis, Missouri, March 18 - 22

## GRANTS

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“NNU RockSAT 2020-2024” NASA/Idaho Space Grant Consortium \$134,000 in 2020

“In-Space RF Power Transmission, Communications, and Virtual Reality Imagery: 2019-20 RockSat-X Payload” NASA/Idaho Space Grant Consortium \$25,000 in 2019

“Backscatter Radio Communication Between CubeSat and Remote Wireless Sensors” NASA USIP \$200,000 for 2016-17

“Flexible/Printable Spacecraft – A Prelude to a New Type of CubeSAT” NASA/Idaho Space Grant Consortium \$20000 in 2015

“Flexible/Printable Spacecraft and Airfoil Structures” NASA/Idaho Space Grant Consortium \$20000 in 2014

“Use of FleX Antennas in Space Environments and De-spinning Flight Video” NASA/Idaho Space Grant Consortium \$20000 in 2013

“NNU Engineering Faculty Hiring Start-up Grant”  
Micron Technology, \$200,000 in 2012

“NNU 3-D Design Lab Equipment Grant”  
Hewlett-Packard, \$200,000 in 2012

“Phase Separation Methods in Micro-Gravity Using Superhydrophobic and Hydrophilic Surfaces”  
NASA/Idaho Space Grant Consortium \$5000 in 2012

“Feasibility of Using Superhydrophobic Surfaces and Testing Radiation Hardened Chips During Rocket Launches”  
NASA/Idaho Space Grant Consortium \$10,000 in 2012

“Superhydrophobic Materials in Microgravity”  
NASA/Idaho Space Grant Consortium \$5000 in 2011

“Idaho RISE Program at NNU”  
NASA/Idaho Space Grant Consortium \$3000 in 2010

“Idaho RISE Program at NNU”  
NASA/Idaho Space Grant Consortium \$3000 in 2009

“RockON Workshop”  
NASA/Idaho Space Grant Consortium \$5000 in 2009

“Idaho RISE Program at NNU”  
NASA/Idaho Space Grant Consortium \$3000 in 2008

“Idaho RISE Program at NNU”  
NASA/Idaho Space Grant Consortium \$3000 in 2007

“Idaho RISE Program at NNU”  
NASA/Idaho Space Grant Consortium \$2500 in 2006

“Idaho RISE Program at NNU”  
NASA/Idaho Space Grant Consortium \$2500 in 2005

“Idaho RISE Program at NNU”  
NASA/Idaho Space Grant Consortium \$2500 in 2004

## **AWARDS, HONORS & ACTIVITIES**

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- Church Board Member, June 1997 - May 2001, April 2009 – March 2017
- Youth leader for 10 years.
- Grade School “Science” Presentations 2002-2015
- Watson Fund Grant – To fund research into the physics of brass instruments, 2002
- Finalist, Graduate Student Poster Competition, Purdue University, 1998
- Graduate Student Scholastic Achievement Award, Virginia Commonwealth University, 1994
- Billy Sloope Service Award, Virginia Commonwealth University, 1994
- Sigma Pi Sigma Honor Society in Physics, Virginia Commonwealth University chapter, 1992
- Graduated Cum Laude from Northwest Nazarene College, 1992
- Science Honors, by vote of the faculty of the division of Mathematics and Natural Science, Northwest Nazarene College, 1992
- President Society of Physics Students, Northwest Nazarene College Chapter 1990-1992
- Northwest Indiana Bible Quizzing Director, June 1995 - April 1999
- Voting Poll Judge – Canyon County, ID

## **CLEARANCES**

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**DoD Secret** – May 1999 – August 2001